

REMARKS

Independent Claims 34 and 56 have been amended to incorporate the subject matter of dependent claims 69 and 70, respectively. Support for the amendments is found in the claims as previously recited.

Independent Claims 34 and 56 have been further amended to recite that a first distance between members of a first pair of opposing pair members differs from a second distance between members of a second pair of opposing pair members. Support for the amendment can be found in FIG. 2 of the application as filed, wherein a distance between sensors 44h and 44d differs from the distance between sensors 44b and 44f.

Claims 69-70 have been canceled without prejudice to their merit.

Claims 1-7, 10-12, 14, 18-22, 28, 30-34, 37, 39-47, 49-51, and 54-68 remain in the application.

Claims 19-22, 28, 30-33 and 56-66 currently stand withdrawn pursuant to the earlier restriction requirement.

Claims 1-7, 10-12, 14, 18, 34, 37, 39-47, 49-51, 54-55, 67, and 68 are active in the application.

Statement of Substance of Interview as Per MPEP §713.04

Applicants greatly extend their appreciation to the Examiner for allowing Charles S. Sara and Dr. Daniel Blasiolo the opportunity to have an interview on October 28, 2009.

In the interview, Applicants argued, and the Examiner agreed, that Haynor does not explicitly teach a sensor array dimensioned and configured to detect the x-axis, the y-axis, and the z-axis, wherein the array is configured to correspond to a magnetic field shape such that each sensor in the array is excited by a same magnitude and a same angle of flux when centered about the z-axis of the magnet, as recited in the independent claims. The Examiner cited four references as possibly teaching this structural limitation. The references and the sections deemed as relevant by the Examiner (in parentheses) are as follows:

1. WO 97/13467 to Catamo (page 4, sections 28-31);
2. U.S. Pat. No. 4,622,644 to Hansen (FIG. 3);
3. U.S. Pat. No. 4,054,881 to Raab (no specified sections); and
4. U.S. Pat. No. 5,731,996 to Gilbert (column 2, lines 38-54).

The Examiner agreed to accept a Supplemental Amendment with remarks and/or claim amendments in view of the references cited above.

Remarks on References Cited in Interview in Relation to Claims

For the reasons outlined in the Response dated October 19, 2009, the combination of Durham, Haynor, Putative Admission, and Hollis fails to teach or suggest an array of sensors dimensioned and configured to detect the x-axis, the y-axis, and the z-axis wherein the array is configured to correspond to a magnetic field shape such that each sensor in the array is excited by a same magnitude and a same angle of flux when centered about the z-axis of the magnet, as recited in independent Claims 1 and 34. Therefore, Claims 1 and 34 and claims depending therefrom are not obvious over the prior art cited in the rejections of record.

Applicants submit that Catamo, Hansen, Raab, and Gilbert fail to make up for the deficiencies of Durham, Haynor, Putative Admission, and Hollis with respect to the limitations recited in Claims 1 and 34.

Catamo, for example, describes a sensor array on page 4, sections 28-31. The sensor array contains four individual sensors positioned on a plane in a “simmetric [*sic*] and equidistant (crosswise)” manner (see line 4 of section 28 of Catamo). However, Catamo teaches that this sensor configuration is capable of detecting only the x- and y-axes. Catamo states:

The obtained measurements [from the sensors] are again filtered at software level, visualized on a graphic and alphanumeric display unit. It is then obtained the difference of numeric values of each signal couple, relative to a diagonal of the cross. The ones relative to the diagonal parallel to the medullary rod form the X axis; those at 90° form the Y axis. (page 4, section 31 of Catamo)

To obtain information regarding the z axis, Catamo teaches an additional set of four sensors oriented at 45° relative to the first set of sensors:

It is possible to obtain a threedimensional image by setting the Z axis too (ortogonal to X and Y axes), determining absolute certain coincidence of the hole with the magnetic field, displayed on the screen by 2 coincident light signals. Such axis (Z) is obtained joining the cylinder containing the 4 magnetic iron sensor at 90° with another cylinder with 4 sensor at 90° but with a 45° rotation in relation to the first ones. (page 5, sections 34-35 of Catamo; *sic*)

Such a second set of sensors oriented at 45° in relation to the first set in the manner taught by Catamo would not detect the same angle of flux when the array is centered about the z-axis of a magnet. Thus, Catamo does not teach or suggest an array of sensors dimensioned and configured to detect the x-axis, the y-axis, and the z-axis, wherein the array is configured to correspond to a magnetic field shape such that each sensor in the array is excited by a same magnitude and a same angle of flux when centered about the z-axis of the magnet.

Hansen, in FIG. 3, teaches a three-axis Hall-effect antenna. As described on column 6, lines 14-17 of Hansen, the three-axis Hall-effect antenna comprises three Hall-effect sensing devices “mounted in a mutually orthogonal relation.” Sensing devices that are orthogonally arranged in the manner taught by Hansen would not be excited by the same angle of flux when centered about the z-axis of a magnet. Thus, Hansen does not teach or suggest an array of sensors dimensioned and configured to detect the x-axis, the y-axis, and the z-axis, wherein the array is configured to correspond to a magnetic field shape such that each sensor in the array is excited by a same magnitude and a same angle of flux when centered about the z-axis of the magnet. See page 14, first full paragraph of Response dated October 19, 2009 for a similar argument against the magnetic sensing elements of Haynor.

Raab discloses a remote object position locator comprising three mutually orthogonal radiating antennas that transmit electromagnetic radiation to three mutually orthogonal receiving antennas (see abstract and column 2, lines 24-29 of Raab). Because of the orthogonal relationship of the receiving antennas, Raab also does not teach or suggest an array of sensors dimensioned and configured to detect the x-axis, the y-axis, and the z-axis, wherein the array is configured to correspond to a magnetic field shape such that each sensor in the array is excited by a same magnitude and a same angle of flux when centered about the z-axis of the magnet.

Gilbert describes an apparatus for localizing magnetic dipoles that “tolerates the placement of sensors anywhere in three-dimensional space” (column 2, lines 38-54 of Gilbert). However, Gilbert fails to disclose any determinate sensor arrangements whatsoever, let alone sensor arrangements conforming to the structure recited in independent Claims 1 and 34.

Referring specifically to independent Claim 34, this claim has been amended to further recite an array of sensors that comprises aligned, opposing pair members wherein a first distance between members of a first pair of opposing pair members differs from a second distance

between members of a second pair of opposing pair members. None of Catamo, Hansen, Raab, or Gilbert teaches this limitation. Catamo, for example, explicitly teaches that the positions of the sensors in the array taught therein are “simmetric [*sic*] and **equidistant** (crosswise)” (line 4 of section 28 on page 4 of Catamo; emphasis added), and Hansen, Raab, and Gilbert each fail to teach an array of sensors comprising opposing pair members. Thus, Catamo, Hansen, Raab, and Gilbert do not teach a sensor array comprising opposing pair members wherein a first distance between members of a first pair of opposing pair members differs from a second distance between members of a second pair of opposing pair members.

For the foregoing reasons, Applicants submit that Catamo, Hansen, Raab, and Gilbert do not teach the limitations recited in independent Claims 1 and 34. Applicants therefore submit that Claims 1 and 34 and claims depending therefrom are not obvious over these references in combination with the references cited in the rejections of record.

Applicants submit that Claims 1 and 34 and claims depending therefrom are patentable over the prior art.

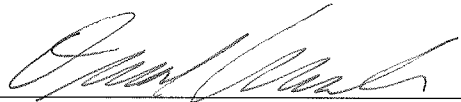
Rejoinder of Method Claims to Device Claims

Method Claims 19-22, 28, 30-33, and 56-66 were previously withdrawn in response to a restriction requirement. Independent Claims 19 and 56 are commensurate in scope with Claims 1 and 34, respectively. Applicants request rejoinder of withdrawn method claims upon allowance of the device claims. See *In re Ochiai*, 37 USPQ2d 1127, and *In re Brouwer*, 37 USPQ2d 1663.

CONCLUSION

In view of Applicant’s amendments and Applicant’s arguments submitted herein, it is believed that the above-referenced claims are now in condition for allowance. Notification of the same is respectfully requested. In addition, Applicants respectfully request the Examiner to withdraw his prior restriction requirement. If the Examiner has any questions at all with respect to Applicants’ response, the Examiner is encouraged to contact the undersigned agent. The undersigned agent welcomes any attempt by the Examiner to come to a resolution of any yet outstanding issues.

Respectfully submitted,



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I certify that this paper is being electronically submitted to the U.S. Patent and Trademark Office via the EFS-Web system on the following date:

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